TWO MINUTE TRAINING

TO: *CH2M HILL PLATEAU REMEDIATION COMPANY*

FROM: *PAUL W. MARTIN, RCRA Subject Matter Expert*
CHPRC Environmental Protection, Hanford, WA

SUBJECT: *D002 WASTE AND DILUTION AS ADEQUATE LDR TREATMENT*

DATE: *MARCH 24, 2016*

CHPRC Projects	CH PRC - Env. Protection	MSA	Hanford Laboratories	Other Hanford Contractors	Other Hanford Contractors
Richard Austin	Brett Barnes	Jerry Cammann	(TBD)	Bill Bachmann	Dan Saueressig
Roni Ashley	Mitch Boyd	Jeff Ehlis		Dean Baker	Merrie Schilperoort
Tania Bates	Ron Brunke	Garin Erickson	**DOE RL, ORP, WIPP**	Scott Baker	Joelle Moss
Bob Cathel	Bill Cox	Lori Fritz		Lucinda Borneman	Glen Triner
Rene Catlow	Laura Cusack	Panfilo Gonzales Jr.	Mary Beth Burandt	Paul Crane	Greg Varljen
Richard Clinton	Lorna Dittmer	Dashia Huff	Duane Carter	Tina Crane	Julie Waddoups
Larry Cole	Rick Engelmann	Mark Kamberg	Cliff Clark	Greta Davis	Jay Warwick
John Dent	Ted Hopkins	Edwin Lamm	Mike Collins	Jeff DeLine	Kyle Webster
Brian Dixon	Sasa Kosjerina	Candice Marple	Tony McKarns	Ron Del Mar	Jeff Westcott
Eric Erpenbeck	Jim Leary	Saul Martinez	Ellen Mattlin	John Dorian	Ted Wooley
Stuart Hildreth	Dale McKenney	Jon Perry	Greg Sinton	Mark Ellefson	
Mike Jennings	Jon McKibben	Thomas Pysto	Scott Stubblebine	Darrin Faulk	
Stephanie Johansen	Rick Oldham	Christina Robison		Joe Fritts	
Jeanne Kisielnicki	Linda Petersen	Don Rokkan		Tom Gilmore	
Melvin Lakes	Fred Ruck	Lana Strickling		Rob Gregory	
Marty Martin	Ray Swenson	Lou Upton		Gene Grohs	
Jim McGrogan	Wayne Toebe			James Hamilton	
Stuart Mortensen	Lee Tuott			Andy Hobbs	
Anthony Nagel	Daniel Turlington			Ryan Johnson	
Dean Nester	Dave Watson			Dan Kimball	
Dave Richards	Joel Williams			Megan Lerchen	
Phil Sheely				Richard Lipinski	
Connie Simiele				Charles (Mike) Lowery	
Jennie Stults				Michael Madison	
Michael Waters				Terri Mars	
Jeff Widney				Cary Martin	
				Grant McCalmant	
				Steve Metzger	
				Tony Miskho	
				Matt Mills	
				Tom Moon	
				Chuck Mulkey	
				Mandy Pascual	
				Kirk Peterson	
				Jean Quigley	

TWO MINUTE TRAINING

SUBJECT: D002 Waste and Dilution as Adequate LDR Treatment

Q: A customer has a container of waste acid (pH ≤ 2) that exhibits the characteristic of corrosivity and has been assigned the hazardous waste code D002. The land disposal restriction (LDR) treatment standard for this waste is "DEACT" (deactivation - remove the characteristic) and treat for underlying hazardous constituents (UHCs). The customer has determined that no UHCs are present and therefore wants to simply add water to the waste to raise the pH to >2 and remove the characteristic. Can the customer add water to this waste acid in order to meet the LDR treatment standard of DEACT or would this be considered impermissible dilution?

A: Per 40 CFR 268.3(a), it basically states that dilution of an LDR waste cannot occur as a substitute for adequate LDR treatment. There is an exception to the dilution prohibition in 40 CFR 268.3(b) but it is limited to management in Clean Water Act (CWA) systems or CWA equivalent systems.

However, 40 CFR 268, Appendix VI, "Recommended Technologies to Achieve Deactivation Of Characteristics In Section 268.42" provides other specified treatment options for meeting the DEACT standard. Per this table, a D002 waste with a pH of ≤2 can be deactivated by using the specified technologies of RCORR (recovery of acids or bases), INCIN (incineration) or NEUTR (neutralization). A review of 40 CFR 268.42, "Treatment standards expressed as specified technologies" defines NEUTR as: "Neutralization with the following reagents (or waste reagents) or combinations of reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals".

Therefore, per the EPA recommended technologies in 40 CFR 268, Appendix VI, our customer could add water to the acid waste in order to meet the DEACT treatment standard. When the addition of water creates a pH >2, the waste would be deactivated and the LDR treatment standard achieved. This dilution would be permissible since EPA considers it adequate LDR treatment.

Note that if the customer's acidic waste had also contained UHCs, neutralization alone would not be an adequate form of treatment since the UHCs would be impermissibly diluted. An acidic or basic waste with UHCs could be neutralized to remove the corrosive characteristic but then subsequent treatment would be required such as solidification or incineration to address any UHCs.

SUMMARY:

- The LDR treatment standard of DEACT can be achieved via NEUTR.
- NEUTR includes neutralization with water that results in a pH greater than 2 but less than 12.5.
- Adding water to a waste acid with no UHCs would not be considered impermissible dilution since EPA has determined that NEUTR is an adequate form of treatment for DEACT.

Excerpts from 40 CFR 268.3, 268.42 and 268, Appendix VI are attached to the e-mail. If you have any questions, please contact me at "Paul_W_Martin@rl.gov" or at (509) 376-6620.

TWO MINUTE TRAINING - ATTACHMENT

SUBJECT: D002 Waste and Dilution as Adequate LDR Treatment

40 CFR 268.3 Dilution prohibited as a substitute for treatment.

(a) Except as provided in paragraph (b) of this section, no generator, transporter, handler, or owner or operator of a treatment, storage, or disposal facility shall in any way dilute a restricted waste or the residual from treatment of a restricted waste as a substitute for adequate treatment to achieve compliance with subpart D of this part, to circumvent the effective date of a prohibition in subpart C of this part, to otherwise avoid a prohibition in subpart C of this part, or to circumvent a land disposal prohibition imposed by RCRA section 3004.

(b) Dilution of wastes that are hazardous only because they exhibit a characteristic in treatment systems which include land- based units which treat wastes subsequently discharged to a water of the United States pursuant to a permit issued under section 402 of the Clean Water Act (CWA), or which treat wastes in a CWA-equivalent treatment system, or which treat wastes for the purposes of pretreatment requirements under section 307 of the CWA is not impermissible dilution for purposes of this section unless a method other than DEACT has been specified in §268.40 as the treatment standard, or unless the waste is a D003 reactive cyanide wastewater or nonwastewater.

40 CFR 268, Appendix VI

Recommended Technologies to Achieve Deactivation of Characteristics in Section 268.42

The treatment standard for many characteristic wastes is stated in the §268.40 Table of Treatment Standards as "Deactivation and meet UTS." EPA has determined that many technologies, when used alone or in combination, can achieve the deactivation portion of the treatment standard. Characteristic wastes that are not managed in a facility regulated by the Clean Water Act (CWA) or in a CWA-equivalent facility, and that also contain underlying hazardous constituents (see §268.2(i)) must be treated not only by a "deactivating" technology to remove the characteristic, but also to achieve the universal treatment standards (UTS) for underlying hazardous constituents. The following appendix presents a partial list of technologies, utilizing the five letter technology codes established in 40 CFR 268.42 Table 1, that may be useful in meeting the treatment standard. Use of these specific technologies is not mandatory and does not preclude direct reuse, recovery, and/or the use of other pretreatment technologies, provided deactivation is achieved and underlying hazardous constituents are treated to achieve the UTS.

Waste code/subcategory	Nonwastewaters	Wastewaters
D002 Acid Subcategory based on 261.22(a)(1) with pH less than or equal to 2	RCORR NEUTR INCIN	NEUTR INCIN
D002 Alkaline Subcategory based on 261.22(a)(1) with pH greater than or equal to 12.5	NEUTR INCIN	NEUTR INCIN

TWO MINUTE TRAINING - ATTACHMENT

SUBJECT: D002 Waste and Dilution as Adequate LDR Treatment

40 CFR 268.42 Treatment standards expressed as specified technologies.

(a) The following wastes in the table in §268.40 “Treatment Standards for Hazardous Wastes," for which standards are expressed as a treatment method rather than a concentration level, must be treated using the technology or technologies specified in the table entitled "Technology Codes and Description of Technology-Based Standards" in this section.

Table 1-Technology Codes and Description of Technology-Based Standards

Technology code	Description of technology-based standards
DEACT:	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
NEUTR:	Neutralization with the following reagents (or waste reagents) or combinations of reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.